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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
RIPA, BRYAN D	

ART UNIT	PAPER NUMBER
1795	

NOTIFICATION DATE	DELIVERY MODE
03/02/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

efspatents@sbiplaw.com

Office Action Summary	Application No.	Applicant(s)	
	10/540,232	WURM ET AL.	
	Examiner	Art Unit	
	BRYAN D. RIPA	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 December 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12 and 20-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12 and 20-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

In response to the amendment received on December 10, 2009:

- claims 1-12 and 20-29 are currently pending
- the objections to claims 4-13 under 37 CFR 1.75(c) are withdrawn in light of the amendments to the claims
- the rejections of claims 12 and 13 under 35 U.S.C. 112, second paragraph, are withdrawn in light of the amendments to the claims
- the previous prior art rejections of claims 1-3 are maintained
- new grounds of rejection are presented below

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claims 1 and 28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Specifically, claim 1 as amended recites the limitation "The anode" in the first line of the claim. However, there is insufficient antecedent basis for this limitation in the claim.

Additionally, claim 28 recites the limitation "the anode" in the last line of the claim. However, there is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by HARVEY.

Regarding claim 1, HARVEY teaches an anode for electroplating which comprises an anode base (see anode 30) and a shield (see bottom rack 54) wherein the anode base comprises a support material and an active layer (see col. 12 lines 45-51 teaching the use of titanium, i.e. a support material, coated with a precious metal oxide or graphite, i.e. an active layer) and wherein the shield is attached to the anode base at a distance from it (see figure 9 below showing bottom rack 54 attached to anode 30 and protruding therefrom so that there is a set distance between the anode and cathode at the upper tip of bottom rack 54) and which reduces material transport to

and from the anode base (see figure 9 showing bottom rack 54 which would act to reduce the material transport to and from the anode base in the lower region of anode 30). See figure 9 below.

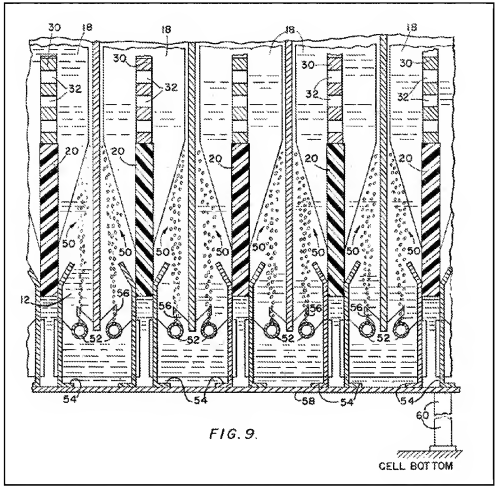


FIG. 9.

Regarding claim 2, HARVEY teaches the anode in which the support material is self-passivating under electrolysis conditions (see col. 12 lines 45-51 teaching the use of titanium as the material for the support material).

Regarding claim 3, HARVEY teaches the anode in which the active layer is electron-conducting (see col. 12 lines 45-51 teaching the use of titanium as the support material which is coated with a precious metal oxide or graphite as the active layer which is known to be electron-conducting).

3. Claims 1-7, 9-12, 20-25, 27 and 28 are rejected under 35 U.S.C. 102(e) as being anticipated by Kovarsky, (U.S. Pat. No. 6,852,209) (hereinafter referred to as "KOVARSKY").

Regarding claim 1, KOVARSKY teaches an anode for electroplating which comprises an anode base and a shield (see anode 112 and lid 130), wherein the anode base comprises a support material and an active layer (see col. 4 lines 14-22 teaching anode 112 being an insoluble anode comprising a support material and active layer as claimed), and wherein the shield is attached to the anode base at a distance from it and reduces material transport to and from the anode base (see anode 112 and lid 130 situated within plating cell 102 so as to be attached together and positioned at a distance from each other; see also col. 5 lines 43-51 teaching the relative positioning between anode 112 and lid 130, wherein lid 130 would inherently act to reduce material transport to and from the anode, i.e. would provide increased resistance to material diffusion). See figure 1 below.

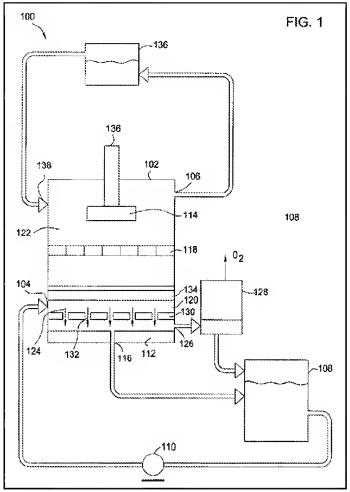


FIG. 1

Regarding claims 2 and 3, KOVARSKY teaches an anode for electroplating in which the support material is self-passivating under electrolysis conditions and in which the active layer is electron-conducting (see col. 4 lines 14-22 teaching the use of an insoluble anode, e.g. platinized titanium, as claimed).

Regarding claims 4-7, KOVARSKY teaches an anode for electroplating in which the shield comprises a plastic material, a metal grid material, and a plastic and a metal material (see col. 5 lines 43-58 teaching lid 130 having a plurality of uniformly

distributed channels, i.e. a grid, and made of a polymer coated metal). See figure 1 above.

Regarding claim 9, KOVARSKY teaches an anode for electroplating in which the shield is at a distance of 0.01 to 100 mm from the anode base (see col. 5 lines 47-51 teaching the spacing between anode 112 and lid 130 being between 0.5 mm and 200 mm). See figure 1 above.

Regarding claim 10, KOVARSKY teaches an anode for electroplating in which the form of the shield and the arrangement and the distance of the shield from the anode base are such that the gas bubbles forming at the anode during electroplating are brought together (see lid 130 comprising a flat member above anode 112 having a plurality of channels that would act to collect the bubbles generated at the anode and, consequently, act to bring them together as claimed). See figure 1 above.

Regarding claim 11, KOVARSKY teaches an anode for electroplating in which the anode is capable of use as a cathode (see anode 112; see also col. 7 lines 19-22 teaching anode 112 to have an electrical potential applied to it during plating). See figure 1 above.

Please note, the claim limitation reciting the connection of the anode as a cathode is being treated as a statement of intended use. See MPEP §2114. As a result, the prior art anode need only be capable of functioning as claimed.

Regarding claim 12, KOVARSKY teaches a method of electroplating comprising:

- providing an anode base comprising a support material and an active layer (see anode 112 and col. 4 lines 14-22 teaching anode 112 being an insoluble anode comprising a support material and active layer, e.g. a platinized titanium);
- providing a shield attached to the anode base at a distance from the anode base (see anode 112 and lid 130 situated within plating cell 102 so as to be attached together and positioned at a distance from each other; see also col. 5 lines 43-51 teaching the relative positioning between anode 112 and lid 130);
- applying electrical current to the anode base (see col. 7 lines 19-20 teaching the application of an electrical potential between anode 112 and substrate 114); and
- reducing material transport to and from the anode base with the shield (see lid 130 which would inherently act to reduce material transport to and from the anode, i.e. would provide increased resistance to material diffusion). See figure 1 above.

Regarding claims 20-25, 27 and 28, it is noted that the claim limitations all act to further limit the anode used in the electroplating method as claimed in claim 12. Moreover, these additional structural limitations are the same limitations claimed in the apparatus claims 2-7, 9 and 10. As a result, regarding the rejection of each of these respective claims please refer to the rejection of the corresponding apparatus claim above.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-3, 8, 12, 20, 21 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dunn et al., (U.S. Pat. No. 6,120,658) (hereinafter referred to as "DUNN") in view of HARVEY.

Regarding claim 1, DUNN teaches an anode for electroplating which comprises an anode base and a shield (see electrode 12 and electrode cover 10; see also col. 3 line 66-col. 4 line 4 teaching the use of the electrode as an anode), wherein the shield is attached to the anode base at a distance from it and reduces material transport to and from the anode base (see electrode cover 10 attached to electrode 12 so as to provide a space around the anode and which would inherently act to reduce material transport both to and from electrode 12). See figure 4 below.

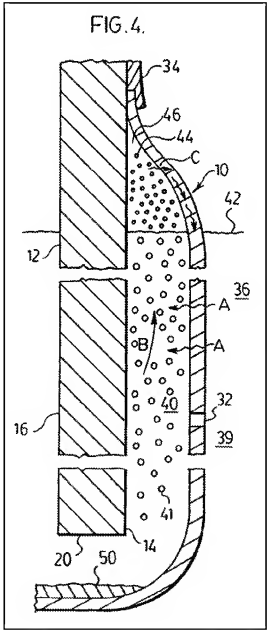
DUNN, however, does not explicitly teach the anode base comprising a support material and an active layer. While DUNN does teach the use of an insoluble anode as the electrode material (see col. 1 lines 13-17 and col. 3 line 66-col. 4 line 2 teaching the use of a lead alloy insoluble electrode), DUNN only explicitly discloses the use of lead alloys that are known to function as insoluble anodes (see col. 3 line 66-col. 4 line 2).

However, HARVEY teaches that while insoluble anodes are often made of lead alloys it is also known in the art to also use insoluble anodes comprising a base material such as titanium with a precious metal oxide coating (see col. 12 lines 45-51).

As a result, the selection of an electrode material comprising a base metal having a precious metal coating for use as an insoluble anode as disclosed by HARVEY would

have been obvious and readily known to one of ordinary skill in the art since it was known to be used for that purpose. See MPEP §2144.07.

Consequently, it would have been obvious to one of ordinary skill in the art at the time of invention to substitute the alloy insoluble electrode of DUNN for the metal coated insoluble electrode of HARVEY as claimed.



Regarding claims 2 and 3, DUNN as modified by HARVEY teaches an anode for electroplating in which the support material is self-passivating under electrolysis conditions and in which the active layer is electron-conducting (see HARVEY at col. 12 lines 45-51 teaching the use of titanium as the support material which is coated with a precious metal oxide or graphite as the active layer which is known to be electron-conducting).

Regarding claim 8, DUNN teaches the anode for electroplating in which the shield is connected to the anode base in an electric current-conducting manner (see adhesive band 34 acting to place electrode cover 10 and electrode 12 in physical contact with each other, i.e. connected in an electric current-conducting manner).

Please note, in interpreting the claims under the broadest reasonable interpretation standard, the Examiner is treating the limitations of claims 8 and 26 as merely requiring the shield and the anode base to be connected in a manner which is capable of conducting current, i.e. either physically touching each other or in physical contact with an electrically conducting material.

Regarding claim 12, DUNN teaches a method of electroplating comprising:

- providing an anode base (see electrode 12; see also col. 3 line 66-col. 4 line 4 teaching the use of the electrode as an anode);

- providing a shield attached to the anode base at a distance from the anode base (see electrode cover 10 attached to electrode 12 so as to provide a space where bubbles are generated);
- applying electrical current to the anode base (see col. 5 lines 43-48 teaching the application of an electric current); and
- reducing material transport to and from the anode base with the shield (see electrode cover 10 which would inherently act to reduce material transport both to and from electrode 12). See figure 4 above.

DUNN, however, does not explicitly teach the anode base comprising a support material and an active layer. Moreover, while DUNN does teach the use of an insoluble anode as the electrode material (see col. 1 lines 13-17 and col. 3 line 66-col. 4 line 2 teaching the use of a lead alloy insoluble electrode), DUNN only explicitly discloses the use of an insoluble anode made of a lead alloy (see col. 3 line 66-col. 4 line 2).

However, HARVEY teaches that while insoluble anodes can be made of various lead alloys, it is also known in the art to use insoluble anodes comprising a base material such as titanium with a precious metal oxide coating (see col. 12 lines 45-51).

As a result, the selection of an electrode material comprising a base metal having a precious metal coating for use as an insoluble anode, as disclosed by HARVEY, would have been obvious and readily known to one of ordinary skill in the art since it was known to use insoluble electrodes having the claimed structure for that purpose. See MPEP §2144.07.

Consequently, it would have been obvious to one of ordinary skill in the art at the time of invention to substitute the metal coated insoluble electrode of HARVEY for the lead alloy insoluble electrode of DUNN.

Regarding claims 20, 21 and 26, please see the discussion above with respect to the rejections of claims 2, 3 and 8 under DUNN in view of HARVEY.

5. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over KOVARSKY as applied to claim 12 above, and further in view of Wang (U.S. Pub. No. 2002/0008036) (hereinafter referred to as "WANG").

Regarding claim 29, KOVARSKY does not explicitly teach the method of electroplating wherein a cathodic current is applied to the anode base.

However, WANG teaches a plating method for applying a thin film to a wafer substrate which comprises switching polarity between the anode and substrate surface which acts as the cathode in a pulse reverse wave form (see figure 8 and ¶210).

Consequently, a person of ordinary skill in the art would accordingly have recognized the use of the anode in a method of plating requiring the application of a cathodic potential to the anode for brief periods of time.

The combination of familiar elements is likely to be obvious when it does no more than yield predictable results. See *KSR Int'l Co. v. Teleflex Inc.*, 82 USPQ2d 1385, 1395–97 (2007) (see MPEP § 2143, A.).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use the plating apparatus of KOVARSKY in a plating method using a reverse pulse plating process according to WANG in order to obtain the predictable result of applying a cathodic potential to anode 112 as claimed.

Response to Arguments

Applicant's arguments filed December 10, 2009 have been fully considered but they are not persuasive.

Applicant argues that:

"*Harvey does not disclose a shield attached to the anode base which reduces material transport to and from the anode base as specifically recited in independent claim 1 and more specifically recited in claims 2-3.*" See Applicant's Remarks at pages 5 and 6.

While the Examiner readily acknowledges differences between the disclosed invention and the cited prior art, the Examiner nevertheless respectfully disagrees with Applicant's contention that HARVEY fails to teach an anode having a shield attached thereto which functions to reduce material transport to and from the anode as presently claimed. Furthermore, it is the Examiner's position that as long as the bottom rack 54 of HARVEY functions to reduce the material transport to and from the anode base to any degree the structure would read on the present claim limitation.

Also, it is noted that HARVEY does not explicitly teach the bottom rack 54 acting in the claimed manner. However, as explained above, it is the Examiner's position that the bottom rack 54 would inherently act in the claimed manner to some degree.

Additionally, it is noted that the limitation requiring the shield to act so as to "reduce material transport to and from the anode base" is solely a functional limitation that does not positively recite any structural limitations. See MPEP §2173.05(g). As a result, interpreting the phrase in light of the "broadest reasonable interpretation" standard would merely structurally require the anode and shield to be located proximate to one another so as to function in the claimed manner, i.e. to affect the material transport to some degree.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

1) Frischauf et al., (U.S. Pat. No. 6,755,960) (hereinafter referred to as "FRISCHAUF") which teaches an anode in an enclosure made of a polymer and ion exchange membrane.
2) Shinohara et al., (U.S. Pat. No. 4,075,069) (hereinafter referred to as "SHINOHARA") which teaches the use of an inert woven fabric screen placed over the insoluble anode to prevent the generation of mist during use in the electrolytic process.

3) Smith (U.S. Pat. No. 4,584,082) (hereinafter referred to as "SMITH") which teaches the use of clips or masking devices that are secured to the top of the electrodes and act to coalesce bubbles generated at the electrodes during the electrolytic process.

4) Hillebrand (U.S. Pat. No. 6,602,394) (hereinafter referred to as "HILLEBRAND") which teaches an electroplating device that uses a membrane to separate the cathode from an insoluble anode.

5) Hanson et al., (U.S. Pub. No. 2002/0046942) (hereinafter referred to as "HANSON") which teaches a fountain-type face down electroplating system having a diffuser attached to an anode at a set distance therefrom.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRYAN D. RIPA whose telephone number is 571-270-7875. The examiner can normally be reached on Monday to Friday, 9:00 AM to 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on 571-272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Harry D Wilkins, III/
Primary Examiner, Art Unit 1795

/B. D. R./
Examiner, Art Unit 1795